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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Assessment of Qualification for Treatment under the Arizona Natural and Exceptional Events Policy for the High Particulate (PM₁₀) Concentration Event in the Rillito Area on July 5, 2007

Background

ADEQ operates a particulate monitor that measures particulate matter smaller than 10 microns (PM₁₀) in Rillito, Arizona near the cement plant operated by Arizona Portland Cement. In the 1994 Rillito PM₁₀ State Implementation Plan (SIP), a series of specific control measures were prescribed for the area to address sources of particulates and were implemented (see attached). All appropriate SIP control measures were in place during the event demonstrating, per 40 CFR 50.1(j), that the event “is not reasonably controllable or preventable.” The monitoring record at Rillito is consistent with a clean data finding to allow the area to be redesignated as attainment for particulate matter and would be eligible for a limited maintenance plan to assure the attainment status of the area is maintained.

The Arizona Department of Environmental Quality (ADEQ) issues a Dust Control Action Forecasts for Maricopa County as part of the Natural Events Action Plan for the area, and also issues a Dust Re-Entrainment Risk Wind Forecast for the Green Valley area south of Tucson. The Green Valley forecast issued on Wednesday, July 4, 2005 included a warning that the summer monsoons would begin over the next few days over much of Arizona, and that there was a moderate risk of gusty winds and dense blowing dust from thunderstorms, even distant thunderstorms (see attachments). The Maricopa County forecast included the same forecast and advisories (see

attachments). These forecasts/advisories satisfy the requirement in 40 CFR 51.920(a)(1).

Thunderstorm cells materialized south of Green Valley on the evening of July 4th, bringing elevated PM₁₀ concentrations into the area in the early morning hours of July 5th. Davis-Monthan AFB reported southeast winds gusting to 34 miles per hour at 2:00 a.m. on July 5th. This influx of moisture from the southeast brought sufficient moisture into the region to trigger widespread thunderstorms on the afternoon of July 5th. An intense thunderstorm cell brought elevated wind speeds and blowing dust into the Tucson area on the evening of July 5th.

An elevated PM₁₀ concentration was measured on the Rillito monitor on July 5th. The Rillito measurement was from a Partisol 2000 filter-based Federal Reference Method (FRM) monitor that does not provide hourly values. Hourly concentration data for analysis of the episode is available from monitors operated by Pima County Department of Environmental Quality (PDEQ). As discussed in Section 3 and shown in Figure 1, these monitors measured a 24-hour PM₁₀ concentration that was greater than the 95th percentile at each site. The following are the key PM₁₀ monitor readings for the monitors examined in this report:

Monitor (Operator/Type)	AQS ID	24-hr Avg PM ₁₀	1-hr Max PM ₁₀	Time of Max 1-hr	Flag(A)***
PIMA COUNTY					
Rillito (ADEQ/FRM)	04-019-0020*	208	N/A	N/A	A or RJ
Geronimo (PDEQ/TEOM)	04-019-1113*	77	520	2000	None
Green Valley (PDEQ/BAM)	04-019-1030*	77	293	0000	None

* EPA Air Quality System Identification Number

** ADEQ Ambient Air Assessment Database Identification Number

*** 24-hr PM₁₀ concentration influenced by natural or exceptional event to be flagged.

Type Abbreviations: BAM – Beta-Attenuation Mass Monitor (Continuous monitor)

TEOM – Tapered Element Oscillating Microbalance Monitor (Continuous monitor)

FRM – Federal Reference Method

The preliminary findings from this analysis were presented at a stakeholders meeting in Rillito, AZ on May 15th 2008. ADEQ has finalized this demonstration, which was made available for public comment from August 11th 2008,

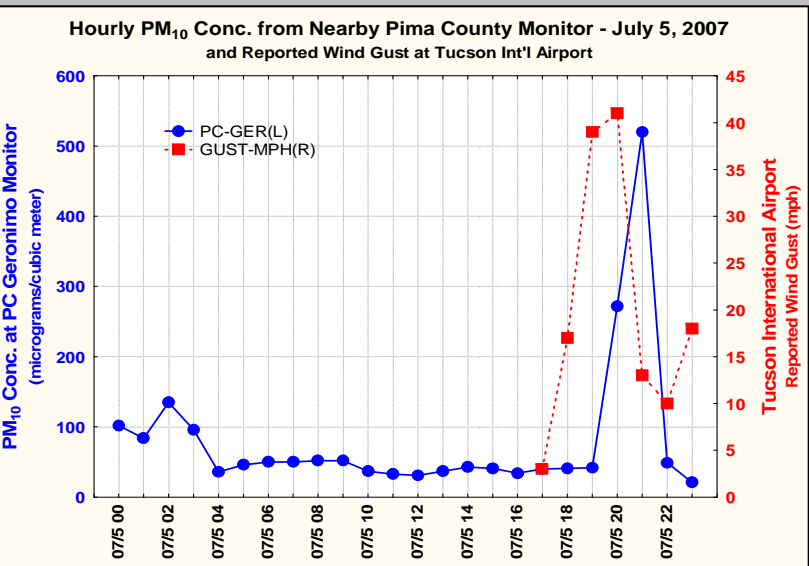
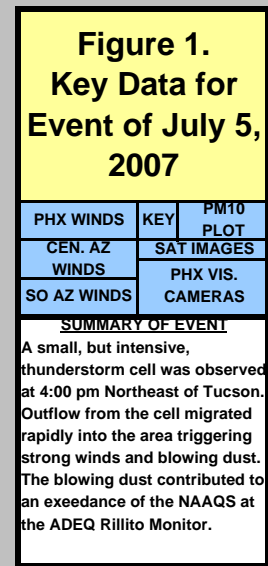
through September 10th 2008. Any comments that were received were forwarded to EPA with this demonstration pursuant to 40 CFR 51.14(c)(3)(i).

CENTRAL PHOENIX						
	Hr	T(F)	RH	Rn	Spd	Max Dir
15-Phx Encanto	1	82	36	-	1	3 E
	2	82	34	-	1	3 NE
	3	84	28	-	3	7 E
	4	85	24	-	3	7 E
	5	83	27	-	2	7 E
	6	83	26	-	2	7 E
	7	86	26	-	2	6 E
	8	90	24	-	4	8 SE
	9	95	21	-	5	10 SE
	10	98	17	-	6	14 SE
	11	100	16	-	3	7 SW
	12	104	16	-	4	10 S

NWS-DAVIS MON AFB						
	Hr	T(F)	VR	Dust	Spd	Gust Dir
NWS-DAVIS MON AFB	1	95	0	-	23	23 SE
	2	93	0	-	22	34 SE
	3	91	0	-	18	18 SE
	4	89	0	-	16	16 SE
	5	85	0	-	6	6 S
	6	85	0	-	8	8 S
	7	90	0	-	15	15 SE
	8	92	0	-	15	23 SE
	9	96	0	-	17	17 E
	10	98	0	-	14	14 SE
	11	101	0	-	6	6 S
	12	104	0	-	3	3 VR

NWS-TUCSON INT						
	Hr	T(F)	VR	Dust	Spd	Gust Dir
NWS-TUCSON INT	1	93	10	-	9	9 S
	2	93	10	-	11	11 SE
	3	91	10	-	14	14 SE
	4	88	10	-	0	0 N
	5	87	10	-	6	6 SE
	6	88	10	-	9	9 SE
	7	89	10	-	13	13 SE
	8	92	10	-	14	20 SE
	9	96	10	-	13	13 E
	10	99	10	-	14	14 SE
	11	101	10	-	9	16 E
	12	103	10	-	8	8 E

Event Contrib. Analysis			
Hourly PM ₁₀ Conc. (µg/m ³)			
MONITORS:		Hr	1 2
1-GERONIMO		1	84 293
2-GREEN VALLEY		2	135 224
		3	96 208
		4	36 89
		5	46 39
24-Hr. Avg PM ₁₀		6	50 31
Monitor: with w/o		7	50 31
1-GERONIMO		8	52 45
2-GREEN		9	52 68
		10	37 49
> NAAQS		11	33 34
Pink=Event Contrib.		12	31 35
Conclusion: As shown above, the PM ₁₀ concentrations would have been significantly less "BUT FOR" the event contribution (hours highlighted in pink).			
		1	37 38
		2	43 46
		3	41 38
		4	34 39
		5	40 38
		6	41 45
		7	42 41
		8	272 53
		9	520 189
		10	49 69
		11	21 81
		12	28 38

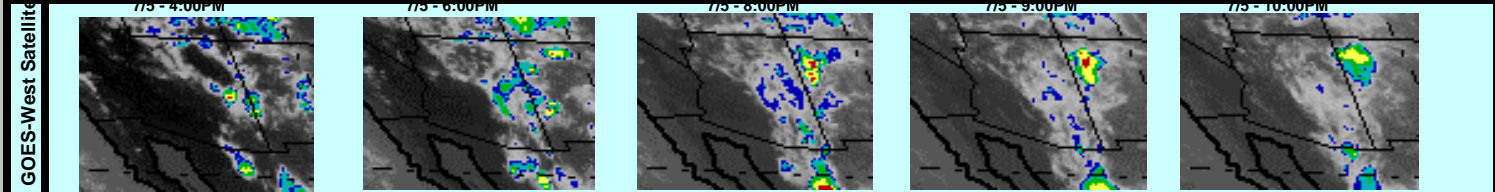


COOLIDGE						
	Hr	T(F)	RH	Rn	Spd	Max Dir
05-Coolidge	1	76	39	-	2	5 SE
	2	74	46	-	3	6 E
	3	73	44	-	3	6 S
	4	73	41	-	3	8 SE
	5	74	38	-	2	6 NE
	6	75	39	-	3	5 N
	7	78	42	-	2	5 SE
	8	87	44	-	2	5 SE
	9	94	31	-	2	4 S
	10	99	24	-	2	6 S
	11	101	22	-	2	6 SE
	12	103	20	-	4	11 S

BUCKEYE						
	Hr	T(F)	RH	Rn	Spd	Max Dir
26-Buckeye	1	87	18	-	3	7 NE
	2	82	25	-	2	6 NE
	3	83	20	-	3	5 N
	4	81	21	-	3	6 NE
	5	79	27	-	4	7 E
	6	78	27	-	3	6 N
	7	83	22	-	4	8 N
	8	90	29	-	1	4 SE
	9	90	41	-	3	6 SW
	10	94	34	-	3	4 SW
	11	96	35	-	4	7 SE
	12	101	25	-	3	6 SE

MARICOPA						
	Hr	T(F)	RH	Rn	Spd	Max Dir
06-Maricopa	1	86	20	-	6	12 S
	2	86	17	-	7	12 S
	3	85	16	-	8	11 S
	4	84	17	-	6	9 S
	5	81	22	-	4	6 E
	6	80	26	-	4	7 SE
	7	81	32	-	4	7 E
	8	90	22	-	6	10 S
	9	95	18	-	5	9 S
	10	101	13	-	8	12 S
	11	103	12	-	6	11 S
	12	106	11	-	6	13 S

Historical Distribution			
5-Yr. Dist. of Values (µg/m ³)			
MONITORS:		Column Index	
1-GERONIMO		Yr - All Data (5-Yrs)	
2-GREEN VALLEY		Sea - Data for Summer season only (5-Yrs)	
3-RILLITO			
Cum. Freq.	Mon 1	Mon 2	Mon 3
Min	6	12	2
0.5%	9	12	2
1.0%	9	13	3
2.5%	12	13	4
5%	15	15	6
10%	18	16	7
25%	22	20	11
50%	30	24	16
75%	39	31	21
90%	55	38	28
95%	63	44	33
97.5%	66	47	41
99.0%	75	61	53
99.5%	80	69	67
Max	104	77	127
Flagged Value	N/A	N/A	208
Conclusion: Flagged Value is exceptional in nature (eg. greater than 95% of all data)			

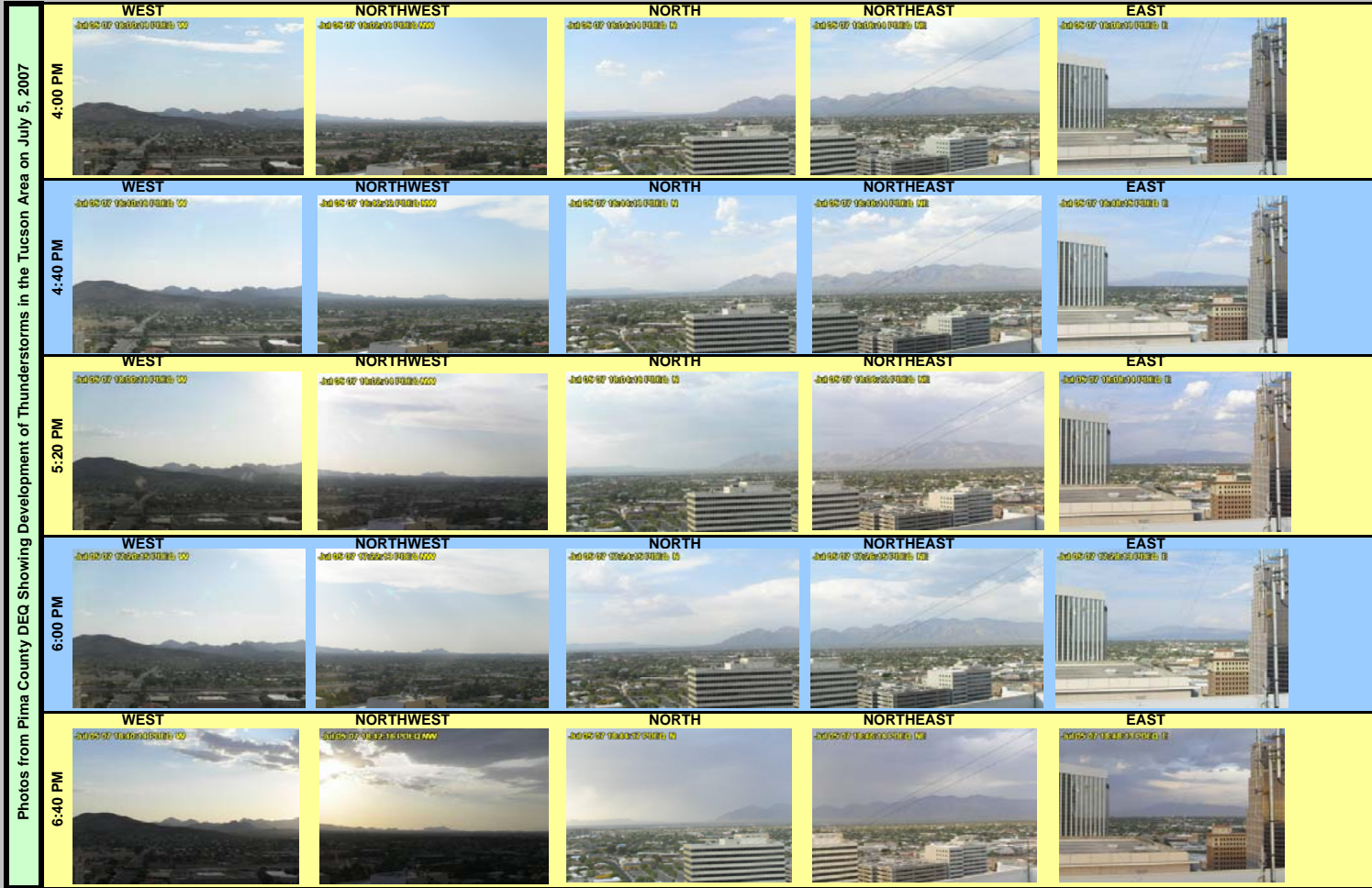


YUMA						
	Hr	T(F)	RH	Rn	Spd	Max Dir
02-YumaValley	1	78	50	-	2	4 NE
	2	79	42	-	2	4 NE
	3	76	48	-	1	3 NE
	4	76	55	-	1	3 N
	5	78	36	-	1	4 S
	6	75	48	-	2	4 NW
	7	78	45	-	1	4 N
	8	84	37	-	2	6 NE
	9	91	32	-	2	6 SE
	10	94	27	-	4	8 SE
	11	98	23	-	4	8 SE
	12	102	16	-	6	11 SE

PALOMA						
	Hr	T(F)	RH	Rn	Spd	Max Dir
19-Paloma	1	78	38	-	2	5 SW
	2	81	32	-	3	7 SW
	3	73	57	-	2	6 NE
	4	71	60	-	1	4 E
	5	71	58	-	3	6 E
	6	71	57	-	3	6 NW
	7	73	58	-	3	9 SW
	8	82	51	-	3	5 SW
	9	89	44	-	3	6 NE
	10	96	25	-	3	5 NE
	11	100	19	-	2	6 N
	12	101	21	-	2	7 W

MARANA						
	Hr	T(F)	RH	Rn	Spd	Max Dir
13-Marana	1	89	18	-	2	5 E
	2	88	20	-	6	18 SE
	3	96	15	-	15	24 SE
	4	95	16	-	13	19 SE
	5	92	18	-	7	17 S
	6	88	22	-	3	6 SE
	7	90	21	-	6	9 SE
	8	94	19	-	9	17 SE
	9	97	18	-	12	19 SE
	10	101	16	-	11	17 SE
	11	103	14	-	8	15 SE
	12	104	13	-	4	11 SE

TUCSON						
	Hr	T(F)	RH	Rn	Spd	Max Dir
01-Tucson	1	85	26	-	1	3 SE
	2	87	23	-	4	18 SE
	3	94	18	-	10	18 SE
	4	91	19	-	7	13 SE
	5	90	21	-	6	13 E
	6	85	25	-	3	4 E
	7	86	27	-	4	8 SE
	8	90	24	-	5	10 E
	9	94	22	-	7	12 SE
	10	98	19	-	6	12 E
	11	100	18	-	6	12 SE
	12	102	15	-	5	11 S



Assessment Under the Technical Criteria Document (TCD)

1. Properly qualify and validate the air quality measurement to be flagged. This was a filter sampling date (1-in-6 run day). As such, data from all filter and continuous analyzers were examined. The air quality monitoring data were reviewed by the agency responsible for operation of the monitor. Data from the Rillito monitor operated by ADEQ was found to be valid. Measurements at nearby continuous monitors operated by PDEQ were examined and found to be valid, with elevated concentrations in the evening. Audits of the analyzers revealed operations were within acceptable tolerance. No local sources were reported as significantly contributing to the air quality episode.

2. Review suspected contributing sources. The Arizona Meteorological Network (AzMET) and National Weather Service (NWS) surface data from the Tucson and Rillito areas showed strong gusty winds in the Rillito area. The National Weather Service reported impaired visibility at Tucson International Airport the evening of July 5th, along with thunderstorms and haze in the area. Examination of the GOES-WEST Satellite images showed a very powerful thunderstorm cell forming over east central Arizona at approximately 4:00 p.m. (see Figure 1). Panoramic camera images from the camera operated by PDEQ showed clear mostly clear sky at 4:00 p.m. that quickly became cloudy as the outflow from the thunderstorm cell quickly moved into the Tucson area (see Figure 1). Wind gust over 25 miles per hour (mph) were evident over a wide area as the thunderstorm migrated. Based on wind gusts in the 30 to 50 mph range, it is assumed that the outflow from the thunderstorm generated blowing dust that contributed to the exceedance. All appropriate control measures required by the 1994 Rillito PM₁₀ state implementation plan (SIP) were in place at the time of the exceedance. Wind velocities were sufficiently high to transport regional sources of dust and to potentially overwhelm local dust control measures.

3. Examine all air quality monitoring information. Data from all monitors in the network were reviewed. Monitoring data from the Rillito monitor are summarized in the table in the Background section of this assessment. Hourly data for the Geronimo and Green Valley monitors operated by PDEQ were also examined. Pursuant to 40 CFR 50.14(c)(3)(iii)(C), the "Historical Distribution" Table in Figure 1 has been included to demonstrate that the event is associated with measured concentrations in excess of normal historical fluctuations, including background (i.e., concentrations greater than the 95th percentile).

4. Examine the meteorological conditions before and during the event. The AzMET meteorological data are

summarized in Figure 1, along with key NWS stations in the Tucson area. The wind data are highlighted yellow if the maximum wind speed in the hour exceeds 15 mph and orange if it exceeds 25 mph. The NWS tables include notations for the visual range (VR) in miles, and comments related to blowing dust, haze, thunderstorms, etc. (full copies of the NWS reports are attached). Strong winds arrived in the Marana area by 7:00 p.m. with winds gusting to 31 mph out of the North. At 8:00 p.m., Marana winds were reported from the East with gusts to 27mph, with winds at the Tucson AzMET station reported from the northeast with gusts to 40 mph, which shifted to the northwest with gust to 51 mph by 9:00 p.m. At 8:00 p.m., the Tucson International Airport NWS reported northeast winds gusting to 39 mph with haze and visibility reduced to 5 miles. Visibility remained impaired at 7 miles with north winds gusting to 41 mph at 9:00 p.m. The NWS observations confirm that the impact was from a regional dust source as opposed to a local source.

5. Perform a qualitative attribution to emission source(s). All evidence indicates the elevated PM₁₀ concentrations in the Rillito area can be attributed to soil emissions in the area north and east of Rillito that were transported over a broad area. No source-specific emission allocation is possible based on the data available for analysis. The hourly concentration data does not show any significant source other than the evening wind-blown dust event.

6. Estimation of Contribution from Sources or Events. The primary source appears to be wind-blown dust over a wide geographic region for which there is not an effective or efficient method to estimate the relative contributions from specific sources. However, it is possible to estimate the event contribution by analyzing continuous data from nearby monitors. While the Geronimo and Green Valley monitors did not record exceedances of the NAAQS, these data do indicate that a significant portion of the 24-hour averages was due to the event contribution. Pursuant to 40 CFR 50.14(c)(3)(iii)(D), the "Event Contrib. Analysis" Table in Figure 1 has been included to demonstrate that there would have been no exceedance or violation but for the event (i.e., the contribution during the event overwhelmed the 24-hour average).

7. Determination that a Natural or Exceptional Event Contributed To an Exceedance. Based on this analysis, the event satisfies the requirement in 40 CFR 50.1(j) that the elevated concentrations at the flagged monitoring sites were attributed to a natural event.

Conclusion

High-wind transport of dust from soils. The elevated concentrations at Rillito were a result of long-range transport of dust and soils from high winds that suspended natural soils and soils from areas where Best Available Control Measures are in place and should be flagged for air

quality planning purposes. The "high wind" flag (A or RJ) should be applied to the monitor readings indicated in the summary table at the beginning of this report, as the monitor would have been below the NAAQS but for the contribution of the event.

RILLITO PM10 STATE IMPLEMENTATION PLAN CONTROL MEASURES

Control Measures

The following control measures have been in place in the Rillito Nonattainment Area (RNA) since the submittal of the 1994 PM₁₀ SIP.

- The operating permit for the Arizona Portland Cement Company (APC), issued by the Arizona Department of Environmental Quality, requires roadways and unpaved parking areas within the company's facilities to undergo stabilization on a routine basis and require the company to keep detailed maintenance records. APC has implemented reasonably available control measures and technologies to mitigate PM₁₀ emissions. These measures include baghouses, dust collectors, spray bars, hoods, shrouds, and a continuously operating monitor system.
- Public roadways within the RNA are maintained by Pima County with PM₁₀ certified street sweepers.
- Pima County stabilizes road shoulders within the RNA on an as-needed basis.
- Pima County enforces a grading ordinance which requires a permit for earth moving activities. The permits call for the use of dust suppressants during and following grading projects. Additionally, public roadways and sidewalks are to be kept free of dirt and debris resulting from permitted earth moving activities at all times.

This series of control measures was responsible for bringing the RNA into attainment of the 24-hour PM₁₀ NAAQS.

Creditable Control Measures from the 1994 Rillito PM₁₀ SIP		
Control Measure	Details	Status
APC Plant and Quarry Operations	Comprehensive road stabilization plan to mitigate emissions.	In effect, included in the APC operating permit.
Pima County Grading Ordinance	Permits for earth moving require stabilization to mitigate fugitive emissions.	In effect.
Bank Stabilization of Santa Cruz River	One time control measure.	Complete.
Reduced Tillage Program	United States Department of Agriculture pilot program was discontinued.	Discontinued.
Dust Stabilization – Rillito Community	Dirt roads within the community are now paved.	Complete.
Avra Valley Road Shoulder Dust Stabilization	2.5 miles will undergo blading and rolling followed by application of MC once per year.	In effect on an as needed basis.



**GREEN VALLEY AND VICINITY
DUST RE-ENTRAINMENT RISK WIND FORECAST
ISSUED WEDNESDAY, JULY 04, 2007**

Three-day weather outlook:

NOTE: During active summer monsoon episodes, outflows from even distant thunderstorms have the potential to cause periods of gusty winds and dense blowing dust.

It appears that the summer monsoon will begin by this weekend over much of Arizona. For the Green Valley area this means an increasing potential for erratic and strong outflow winds from showers and thunderstorms. Since such winds have and can generate areas of blowing dust, the risk level has been raised to moderate.

WINDS

RE-ENTRAINMENT RISK

Day #1: Thu 07/05/2007

No significant winds expected except strong and gusty due to outflow from thunderstorms.

MODERATE

Day #2: Fri 07/06/2007

No significant winds expected except strong and gusty due to outflow from thunderstorms.

MODERATE

Day #3: Sat 07/07/2007

No significant winds expected except strong and gusty due to outflow from thunderstorms.

MODERATE



MARICOPA COUNTY
DUST CONTROL ACTION FORECAST
ISSUED WEDNESDAY, JULY 04 2007
Three-day weather outlook:

NOTE: During active summer monsoon episodes, outflows from even distant thunderstorms have the potential to cause periods of gusty winds and dense blowing dust.

It appears that the summer monsoon will begin by this weekend over much of Arizona. For the local forecast area this means an increasing potential for erratic and strong outflow winds from showers and thunderstorms. Since such winds have and can generate areas of blowing dust, the risk level has been raised to moderate.

R I S K F A C T O R S

	<u>WINDS</u>		<u>STAGNATION</u>		<u>RISK LEVEL</u>
Day #1: Thu 07/05/2007	Variable to 10 mph except strong and gusty due to outflow from late afternoon and evening thunderstorms.	+	Rather stagnant during the morning hours with improvement by afternoon.	=	MODERATE
Day #2: Fri 07/06/2007	Variable to 10 mph except strong and gusty due to outflow from late afternoon and evening thunderstorms.	+	Rather stagnant during the morning hours with improvement by afternoon.	=	MODERATE
Day #3: Sat 07/07/2007	West to northwesterly 5-15 mph except strong and gusty due to outflow from late afternoon and evening thunderstorms.	+	Rather stagnant during the morning hours with improvement by afternoon.	=	MODERATE

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. To review the complete air quality forecast for the Phoenix metropolitan area and the health effects of air pollution, please see ADEQ's Air Quality Forecast at <http://www.azdeq.gov/environ/air/ozone/ensemble.pdf>, or call 602-771-2367 for recorded forecast information.

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**HOURLY OBSERVATIONS TABLE
TUCSON INTERNATIONAL AIRPORT (23160)
TUCSON , AZ
(07/2007)**

Elevation: 2549 ft. above sea level

Latitude: 32.131

Longitude: -110.955

Data Version: VER3

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
05	0053	11	CLR	10.00		93	33.9	64	17.7	44	6.7	18	9	160		27.27			29.75	AA		29.94
05	0153	11	CLR	10.00		93	33.9	64	17.7	44	6.7	18	11	120		27.30			M	AA		29.97
05	0253	11	CLR	10.00		91	32.8	64	17.5	45	7.2	20	14	120		27.29	3	013	29.77	AA		29.96
05	0353	11	CLR	10.00		88	31.1	63	17.0	45	7.2	22	0	000		27.29			29.78	AA		29.96
05	0453	11	CLR	10.00		87	30.6	62	16.6	44	6.7	22	6	130		27.31			29.80	AA		29.98
05	0553	11	CLR	10.00		88	31.1	63	17.0	45	7.2	22	9	130		27.31	3	003	29.80	AA		29.98
05	0653	11	CLR	10.00		89	31.7	63	17.2	45	7.2	22	13	120		27.32			29.81	AA		29.99
05	0753	11	CLR	10.00		92	33.3	66	18.6	49	9.4	23	14	130	20	27.33	1	006	29.82	AA		30.00
05	0853	11	CLR	10.00		96	35.6	67	19.3	49	9.4	20	13	100		27.32			29.81	AA		29.99
05	0953	11	CLR	10.00		99	37.2	68	19.8	49	9.4	18	14	130		27.32			29.80	AA		29.99
05	1053	11	CLR	10.00		101	38.3	68	19.9	48	8.9	17	9	100	16	27.32	8	003	29.80	AA		29.99
05	1153	11	CLR	10.00		103	39.4	67	19.6	45	7.2	14	8	110		27.31			29.79	AA		29.98
05	1253	11	CLR	10.00		104	40.0	67	19.2	42	5.6	12	0	000		27.29			29.77	AA		29.96
05	1353	11	CLR	10.00		107	41.7	67	19.3	40	4.4	10	5	VR		27.27	8	016	29.75	AA		29.94
05	1453	11	CLR	10.00		109	42.8	67	19.3	38	3.3	9	7	VR		27.25			29.72	AA		29.91
05	1553	11	CLR	10.00		107	41.7	67	19.3	40	4.4	10	7	020		27.22			29.70	AA		29.88
05	1653	11	CLR	10.00		106	41.1	67	19.3	41	5.0	11	0	000		27.20	6	023	29.68	AA		29.86
05	1753	11	CLR	10.00		108	42.2	67	19.5	40	4.4	10	3	020		27.20			29.67	AA		29.86
05	1853	11	CLR	10.00		106	41.1	67	19.3	41	5.0	11	9	040	17	27.22			29.69	AA		29.88
05	1924	11	CLR	5.00	VCTS HZ	100	38.0	66	19.1	45	7.0	15	23	080	39	27.24			M	SP		29.90
05	1948	11	CLR	10.00		99	37.0	66	18.9	45	7.0	16	15	050	24	27.26			M	SP		29.92
05	1953	11	CLR	10.00		99	37.2	66	18.7	44	6.7	15	14	040	25	27.27	1	022	29.75	AA		29.93
05	2016	11	CLR	8.00	VCTS	97	36.0	66	18.6	45	7.0	17	14	030	24	27.27			M	SP		29.94
05	2031	11	CLR	7.00		99	37.0	65	18.1	41	5.0	14	21	010	32	27.27			M	SP		29.94
05	2045	11	CLR	9.00	VCTS	99	37.0	64	17.8	39	4.0	12	25	030	34	27.28			M	SP		29.95
05	2053	11	CLR	9.00	VCTS	99	37.2	65	18.1	41	5.0	14	26	010	32	27.29			29.78	AA		29.96
05	2102	11	CLR	10.00		99	37.0	64	17.8	39	4.0	12	22	330	41	27.29			M	SP		29.96
05	2153	11	FEW095	10.00		99	37.0	64	17.8	39	3.9	12	13	100		27.30			29.79	AA		29.97
05	2253	11	CLR	10.00		94	34.4	65	18.3	46	7.8	19	10	130		27.31	1	017	29.80	AA		29.98
05	2353	11	CLR	10.00		92	33.3	65	18.4	48	8.9	22	18	150		27.35			29.83	AA		30.02

Dynamically generated Fri Feb 08 15:36:49 EST 2008 via <http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**HOURLY OBSERVATIONS TABLE
DAVIS-MONTHAN AFB AIRPORT (23109)
TUCSON , AZ
(07/2007)**

Elevation: 0 ft. above sea level

Latitude: 32.166

Longitude: -110.883

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
05	0055	0	CLR	10.00	VCTS	95	35.0	66	18.6	47	8.5	19	23	120		27.11			29.65	AA		29.92
05	0155	0	CLR	10.00		93	34.0	65	18.5	48	8.7	21	22	120	34	27.14	3	009	29.69	AA		29.95
05	0255	0	CLR	10.00		91	32.7	65	18.2	48	8.7	23	18	120		27.13			29.68	AA		29.94
05	0355	0	CLR	10.00		89	31.6	64	17.8	48	8.9	24	16	120		27.14			29.69	AA		29.95
05	0455	0	CLR	10.00		85	29.7	62	16.9	47	8.6	27	6	170		27.15	3	004	29.71	AA		29.96
05	0555	0	CLR	10.00		85	29.5	62	16.9	47	8.4	27	8	180		27.16			29.72	AA		29.98
05	0655	0	CLR	10.00		90	32.3	64	18.0	48	9.0	24	15	130		27.16			29.73	AA		29.98
05	0755	0	CLR	10.00		92	33.3	67	19.5	53	11.4	27	15	140	23	27.17	1	006	29.74	AA		29.99
05	0855	0	CLR	10.00		96	35.3	68	20.0	52	10.9	23	17	110		27.16			29.73	AA		29.98
05	0955	0	CLR	10.00		98	36.4	68	20.0	51	10.7	20	14	120		27.16			29.72	AA		29.98
05	1055	0	CLR	10.00		101	38.1	68	20.1	49	9.6	17	6	180		27.16	8	001	29.72	AA		29.98
05	1155	0	CLR	10.00		104	39.8	67	19.5	44	6.9	13	3	VR		27.15			29.70	AA		29.96
05	1255	0	CLR	10.00		104	39.8	67	19.5	44	6.9	13	10	130		27.13			29.68	AA		29.94
05	1355	0	CLR	10.00		105	40.3	67	19.7	44	6.4	13	0	000		27.11	8	017	29.66	AA		29.92
05	1455	0	CLR	10.00		106	41.2	68	19.8	44	6.4	12	8	300		27.09			29.64	AA		29.90
05	1555	0	CLR	10.00		105	40.5	68	20.0	46	7.5	14	8	040	17	27.06			29.62	AA		29.87
05	1655	0	CLR	10.00		105	40.4	68	19.8	45	7.4	13	2	VR		27.04	6	021	29.61	AA		29.85
05	1755	0	CLR	10.00		106	41.1	68	19.8	44	6.8	12	11	080		27.04			29.61	AA		29.85
05	1855	0	CLR	10.00		105	40.3	67	19.7	44	6.4	13	15	060		27.06			29.61	AA		29.87
05	1918	0	CLR	10.00		99	37.0	67	19.5	48	9.0	18	23	040	32	27.07			29.64	AA	0.02	29.88
05	1934	0	CLR	10.00		99	37.0	67	19.5	48	9.0	18	16	060		27.09			29.65	AA	0.02	29.90
05	1955	0	FEW160	10.00		98	36.7	67	19.1	47	8.3	18	24	020	31	27.11	3	019	29.67	AA	0.02	29.92
05	2055	0	SCT160	10.00		98	36.5	66	18.7	45	7.3	16	17	350	26	27.15			29.70	AA		29.96
05	2116	0	FEW140	10.00		100	38.0	66	18.7	43	6.0	14	11	060	23	27.15			29.69	AA		29.96
05	2124	0	FEW140	10.00		99	37.0	66	18.9	45	7.0	16	14	110		27.15			29.70	AA		29.96
05	2155	0	FEW170	10.00		96	35.7	66	18.8	47	8.3	19	16	100		27.16			29.71	AA		29.97
05	2255	0	FEW180	10.00		94	34.5	65	18.2	46	8.0	19	14	100		27.16	1	016	29.71	AA		29.97
05	2355	0	CLR	10.00		92	33.6	66	18.6	49	9.5	23	18	130	30	27.18			29.74	AA		30.00

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